

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

DRAFT

Conditional Major, Operating

Permit: F-07-034

Sensus Precision Die Casting

Russellville, KY 42276

September 28, 2007

Vahid Bakhtiar, Reviewer

SOURCE ID:	21-141-00022
SOURCE A.I. #:	2755
ACTIVITY ID:	APE20060002

SOURCE DESCRIPTION:

Sensus Precision Die Casting (Sensus), formerly Invensys Precision Die Casting, is an aluminum die casting plant located in Russellville, Kentucky that manufactures aluminum components for a wide range of markets, including automotive, gas meter, small engine, and electronics industries. The die casting process begins with the melting and processing of clean charge in natural gas-fired melting furnaces. Other source operations primarily consist of aluminum die casting operations and metal cleaning and surface coating operations. The Standard Industrial Classification (SIC) Code for this aluminum die casting source is 3363. Emissions from this source include volatile organic compounds (VOCs), particulate matter (PM/PM10), and hazardous air pollutants (HAPs) from the surface coating and Alodine parts washing operations; PM/PM10 and HAPs from the furnace and dross operations; and carbon monoxide (CO), nitrogen oxide (NOx), VOCs, PM/PM-10, and sulfur dioxide (SO₂) from the combustion units. All emissions from the combustion units are uncontrolled. The particulate matter emissions from surface coating operations are subject to 401 KAR 59:010. The Lindberg Barrel Furnace, EP 32, has been removed from service and dismantled. EP 35, the Kimball 4 wall Acme Fab washing machine has been removed from the plant.

The potential to emit (as defined in 401 KAR 52:001, Section 1 (56)) of particulate matter less than ten (10) microns (PM10), any single hazardous air pollutant (HAP) and the combination of HAPs are greater than major source thresholds. To preclude the applicability of 401 KAR 52:020, *Title V Permits*, the source has requested voluntary federally enforceable permit limits such that the potential emissions are below major source thresholds. Therefore, the source is subject to the provisions of 401 KAR 52:030, *Federally-Enforceable Permits for Nonmajor Sources*. This permit is the initial issuance of the source's Conditional Major Permit for this source.

COMMENTS:

Type of control and efficiency:

The source uses a dry fabric filter, with an estimated control efficiency of 99%, to control particulate emissions from the surface coating operations at EP 09. The particulate emissions from the machine

shop 2 grinding operations at EP 69 are controlled by a baghouse with an estimated control efficiency of 99%.

Emission factors and their sources:

Emission factors for surface coating and parts washing operations were estimated using mass balance from the MSDS. Emission factors associated with natural gas combustion were taken from AP-42 Chapter 1.4. For the furnace operations, the emission factor for PM was taken from AP-42 Chapter 12.8; the emission factor for PM-10 was taken from the U.S. EPA Factor Information Retrieval System (FIRE) database; the emission factor for lead was estimated from an engineering estimate; and the emission factors for HF and HCl were determined using material balance and from MSDS for the fluxing agent. The emission factor for VOC for the die casting machines was taken from the U.S. EPA FIRE database. Emissions factors associated with the grinding operations and the dross handling activities were derived from engineering estimates.

Applicable regulations:

(a) 401 KAR 59:010, *New Process Operations*

Pursuant to 401 KAR 59:010, the requirements of this rule apply to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates in 401 KAR Chapter 59, commenced on or after July 2, 1975. The requirements of this rule are included in the permit for the following emission units:

MACHINE SHOP 1:	EP 09 (09)	paint system spray booth (dual)
	EP 80 (80)	bake oven
	EP 11 (11)	Alodine system
MACHINE SHOP 2:	EP 69 (69)	machine shop 2 grinding operations
FURNACE ROOM:	EP 23 (23)	#3 reverberatory furnace
	EP 05 (05)	#3 Seco/Warwick furnace
	EP 08 (08)	#4 Seco/Warwick furnace
	EP 07 (07)	#2 Reverberatory furnace
	EP 06 (06)	#1 Reverberatory furnace
	EP 04 (04)	two (2) Seco/Warwick furnaces - #1 and #2

Pursuant to 401 KAR 59:010, Section 3, the visible emissions from a control device or stack associated with any affected facility shall not equal or exceed 20% opacity.

Mass emission limit pursuant to 401 KAR 59:010 Section 3(2): For process rates less than 60,000 lbs/hr, the allowable emissions of particulate matter shall not exceed:

$$3.59 \times (\text{Tons Processed})^{0.62} \text{ lbs/hr.}$$

(b) 401 KAR 61:020, *Existing Process Operations*

Pursuant to 401 KAR 61:020, the requirements of this rule apply to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates in 401 KAR Chapter 61, commenced before July 2, 1975. The requirements of this rule are included in the permit for the following emission unit:

Furnace Room: EP 36 (36) dross agitator

Pursuant to 401 KAR 61:020, Section 3, the visible emissions from a control device or stack associated with any affected facility shall not equal or exceed 40% opacity.

Mass emission limit pursuant to 401 KAR 61:020 Section 3(2): For process rates less than 60,000 lbs/hr, the allowable emissions of particulate matter shall not exceed:

$$4.10 \times (\text{Tons Processed})^{0.67} \text{ lbs/hr.}$$

Non-applicable regulations:

- (a) 401 KAR 63:005, Section 3, incorporating by reference 40 CFR 63, Subpart RRR, *National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production*, does not apply to this aluminum die casting facility, including the aluminum melt furnaces, since the source melts only clean charge, customer returns or internal scrap and does not operate a sweat furnace, thermal chip dryer or scrap dryer/delacquering kiln/decoating kiln. Therefore, this source is not a *secondary aluminum production facility*, as defined at 40 CFR 63.1503.
- (b) 401 KAR 63:005, Section 3, incorporating by reference 40 CFR 63, Subpart N, *National Emission Standards for Chromium Emissions From Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks*, does not apply to the Alodine systems at EP 01, 03, or 11 as neither chromium electroplating nor chromium anodizing occur in these operations.
- (c) The requirements of 401 KAR 59:225, *New Miscellaneous Metal Parts and Products Surface Coating Operations*, are not applicable to the metal surface coating line at EP 09 and EP 80 because the source is not a major source of volatile organic compounds (VOCs) and is not located in an urban county designated as nonattainment for ozone under 401 KAR 51:010.
- (d) 401 KAR 59:050, *New Storage Vessels for Petroleum Liquids*, does not apply to the diesel fuel tanks, listed as insignificant activities, as the source is not a major source of VOCs or is located in an urban county designated as nonattainment for ozone under 401 KAR 51:010.
- (e) 401 KAR 59:185, *New Solvent Metal Cleaning Equipment*, does not apply to any metal cleaning activity at this plant since the source is not located in a county or portion of a county which is designated ozone nonattainment, for any nonattainment classification except marginal, under 401 KAR 51:010; nor is this a major source.

- (f) 40 CFR 63 Subpart T, *National Emission Standards for Halogenated Solvent Cleaning*, does not apply to the source since the source does not operate an affected solvent cleaning machine using a listed halogenated solvent in a total concentration greater than 5 percent by weight.
- (g) 40 CFR 60 Subpart IIII, *New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines*, does not apply to the emergency propane generator, listed as an insignificant activity, because the unit was installed prior to July 11, 2005 and no approval for modification or reconstruction has been issued.
- (h) 401 KAR 61:050, *Existing Storage Vessels for Petroleum Liquids*, does not apply to the three (3) diesel oil tanks (two (2) 10,000 gallons and one (1) 20,000 gallons) and the glycol tank (4,000 gallon), as insignificant activities, because the source is not located in an ozone nonattainment area.
- (i) 40 CFR 60, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984, does not apply to the one (1) 20,000 gallon diesel oil tank, as an insignificant activity. While the storage capacity of the tank is greater than the rule applicability threshold of 75 cubic meters (m3) (19,812 gallons), the tank was constructed prior to July 23, 1984 and there are no approvals for reconstruction or modification.
- (j) 40 CFR 64, *Compliance Assurance Monitoring (CAM)*, does not apply to any emission unit at this source because it is being approved to operate under a Conditional Major permit. Pursuant to 40 CFR 64.2(a), the requirements of this rule are applicable only to sources required to obtain a Title V (Part 70 or 71) permit.

SOURCE STATUS

On December 4, 1998, U.S. EPA issued a memorandum clarifying that die casting sources meeting certain criteria are not considered as secondary metal production plants, which is one of the twenty eight (28) specifically listed source categories pursuant to 401 KAR 51:017, Section 1(25)(a)(1). This source is considered under this memorandum to be not a secondary metal production plant. This existing source is a minor stationary source for PSD review because emissions of attainment pollutants are limited to less than 250 tons per year.

EMISSION AND OPERATING CAPS DESCRIPTION:

Logan County is designated as attainment for all criteria pollutants. To preclude the applicability of 401 KAR 52:020, *Title V Permits*, total annual source-wide emissions, including emissions of insignificant activities, shall not equal or exceed the following specific limitations on a consecutive twelve (12) month basis:

- (a) Particulate matter (PM/PM10) emissions: 90 tons per year;
- (b) Emissions of any single hazardous air pollutant (HAP): 9 tons per year; and
- (c) Emissions of combined hazardous air pollutants (HAPs): 22.5 tons per year.

Compliance with the above limits shall also make the requirements of 40 CFR Part 63 for major sources of HAP emissions, as incorporated by reference at 401 KAR 63:002, not applicable to this source.

Although the permit is conditioned to allow emissions of particulate matter (PM/PM₁₀) in excess of 100 tons per year, pursuant to 401 KAR 59:010 and 401 KAR 61:010, the permittee voluntarily requested the federally enforceable PM/PM₁₀ emissions limitation of less than 100 tons per year specified above. Accordingly, this approval is being issued as a conditional major operating permit, pursuant to 401 KAR 52:030.

PERIODIC MONITORING:

Sensus shall provide reasonable assurance that the PM/PM₁₀ and HAP emission limitations are met by monitoring amounts and types of process materials used, the furnace production rates, and hours of operation each calendar month. Furthermore, the permittee shall perform a qualitative visual observation of emissions from the furnace and paint booth stacks on a weekly basis and all other stacks on a monthly basis and maintain a log of the observations, and determine the opacity of emissions by Reference Method 9 if visible emissions are observed.

Controls are exclusively for PM/PM₁₀, consisting of a filter for the paint booth and a baghouse for the grinding operations at Machine Shop 2. Monitoring of the control devices shall consist of daily filter inspections, records of filter replacements, and monthly baghouse inspections.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.